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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,846	03/30/2004	Toshihiro Suzuki	1324.70182	3124
24978 7590 02/02/2007 GREER, BURNS & CRAIN 300 S WACKER DR 25TH FLOOR CHICAGO, IL 60606			EXAMINER MAKIYA, DAVID J	
			ART UNIT 2885	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE			MAIL DATE	DELIVERY MODE
3 MONTHS			02/02/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/812,846

Applicant(s)

SUZUKI, TOSHIHIRO

Examiner

David J. Makiya

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 is/are allowed.
- 6) ☒ Claim(s) 1, 3-5, 7 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 3 is objected to because of the following informalities: it is unclear how the linear light sources are located above the substrate but below the reflection plate. Figure 7 shows the linear light sources being above both the substrate and the reflection plate. Therefore, it is unclear as to how the light source is below the reflection plate when the figure shows it being above the reflection plate. The claim will be examined as best understood. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deloy et al. (US Patent 6,789,921) in view of Johnson et al. (US Patent 6,439,731).

With respect to claims 1 and 8, Deloy et al. teaches a liquid crystal display device comprising a liquid crystal display (Column 3, Lines 45-47); and a surface lighting device comprising a surface light source 300 in which linear light sources (Figure 3) having light-emitting elements 303, arranged in series are arranged in a predetermined order (Figure 3) emits white light (Column 2, Lines 52-55); a reflection plate 314 which is laid so as to fill spaces among the light-emitting elements constituting the linear light sources (Figure 4), the reflection plate including a plurality of through-holes in which light-emitting elements can be fit (Figure 3);

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a substrate 302 on which the surface light source and the reflection plate are set; and wherein non-light emitting portions of the light emitting elements are covered by the reflection plate, with the reflection plate positioned between the non-light-emitting portion of the light-emitting elements and the liquid crystal (Column 3, Line 45-Column 4, Line 13). However, Deloy et al. fails to teach the liquid crystal display device wherein the light emitting elements correspond to at least three primary colors of light and the use of a diffusion plate above the surface light source and the reflection plate. Johnson et al. teaches liquid crystal display comprising a liquid crystal display panel 18 and a surface lighting device (Figures 1 and 2) comprising a surface light source 12 in which linear light sources (Figure 2) having light-emitting elements, which correspond to respective colors among combinations of plural colors at least including three primary colors of light (Column 5, Lines 36-45), arranged in series are arranged in a predetermined order, a reflection plate 10 which is laid so as to fill spaces (Figure 2) among the light-emitting elements constituting the linear light sources (Column 4, Lines 60-67), a substrate 10 on which the surface light source and the reflection plate are set, and a diffusion plate 20 which is located above the surface light source and the reflection plate and with the reflection plate positioned between the non-light-emitting portion of the light-emitting elements and both the diffusion plate and liquid crystal display panel (Figure 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to cover the non-light-emitting portions of the light-emitting elements of Deloy et al. with the teachings of Johnson et al. because the white light LEDs of Deloy et al. could use a mixture of "all three primary colors of LEDs, i.e. red, green and blue LEDs, the combination of which appears as white light to the viewer" (Johnson et al.; Column 5, Lines 36-61) and because the "Optical diffuser panel 20, common in backlighted

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LCD devices, convert light from lamp segments or discrete sources into a more uniform glow across the surface of LCD panel 18" (Johnson et al.; Column 6, Line 65-Column 7, Line 1).

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber et al. (US Patent 6,325,524) in view of Johnson et al.

With respect to claims 3 and 5 and as best understood, Weber et al. teaches a surface lighting device comprising a surface light source in which linear light sources having light-emitting elements (21-23), which correspond to respective colors among combinations of plural colors including at least three primary colors of light (Column 1, Lines 19-21), arranged in series are arranged in a predetermined order; a reflection plate 91 which is laid so as to fill spaces among the light-emitting elements constituting the linear light sources; a substrate 24 which has linear projected portions 91 arranged at a fixed interval and on which the surface light source and the reflection plate are set (Figure 2), wherein each of the linear light sources is arranged on only one of a slope or a side of the linear projected portions arranged at the fixed interval on the substrate (Figure 2), such that the linear light sources are located above the substrate but below the reflection plate (Figure A), and an irradiation angle, at which an amount of light of the light emitting elements corresponding to at least one color among the plural colors is maximized according to the interval of the linear projected portions and an interval between the optical system 29 and the substrate is set according to an angle of the slopes or the sides of the linear projected portions (Column 1, Line 58-Column 2, Line 8). Because the references teach the structure of the claimed surface lighting device, the references would also teach that the interval L, the interval H, and the irradiation angle such that a relation of  $L \leq 2 \times H \times \tan(\text{irradiation angle at which an amount of light of the linear light sources is maximized})$  is satisfied. Weber et

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al. also teaches an optical system 29 being above the surface light source and reflection plate, but fails to teach the optical system being a diffusion plate. Johnson et al. teaches a lighting device comprising a surface light source 12, reflection plate 10, and a diffusion plate 20 which is located above the surface light source and the reflection plate (Figure 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the surface lighting device of Weber et al. with the teachings of Johnson et al. because a diffuser "convert light from lamp segments or discrete sources into a more uniform glow across the surface of LCD panel 18" (Johnson et al.; Column 6, Line 65-Column 7, Line 10).

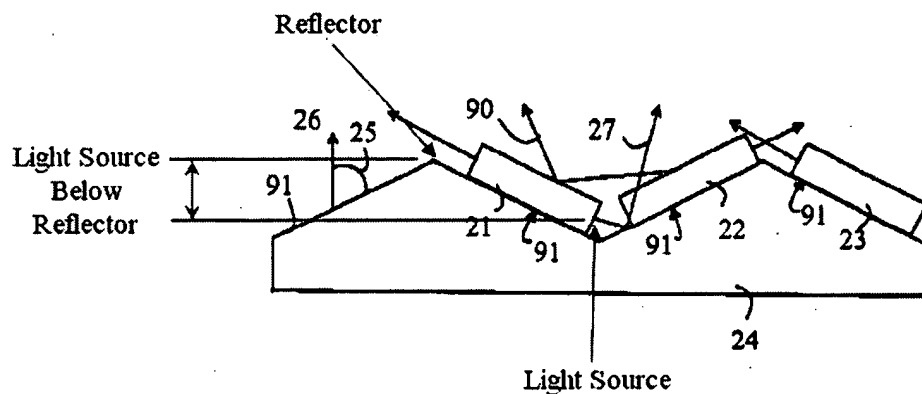


Figure A: Linear light sources and reflection plate of Weber et al.

Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. in view of West et al. (US Patent 6,679,621).

With respect to claims 4 and 7, Johnson et al. teaches a surface lighting device comprising a surface light source in which linear light sources having at least three light-emitting elements, which correspond to respective colors among combinations of plural colors at least including three primary colors of light, arranged in series are arranged in a predetermined order and at a fixed interval, a reflection plate which is laid so as to fill spaces among the light-

emitting elements constituting the linear light sources, a substrate on which the linear light sources and the reflection plate are set, and a diffusion plate which is located above the linear light sources and the reflection plate, the linear light sources are arranged in plural columns to form a surface light source. However, Johnson et al. fails to teach a light irradiation angle correcting means. West et al. teaches a light emitting element 40 and a light irradiation angle correcting means 56 in light-emitting portions 44 or on the light emitting portions of the light-emitting elements wherein an irradiation angle, at which an amount of light is maximized, is set by the light irradiation angle correcting means on the light-emitting portion of the linear light sources corresponding to at least one color among the plural colors according to the interval of the linear light sources and an interval between the diffusion plate and the substrate (Figure 5) and wherein a maximum irradiation angle of the light-emitting elements is corrected such that a point where a maximum irradiation direction of the light-emitting elements, which is corrected by the light irradiation angle correcting means in the light-emitting portions or on the light-emitting portions of the light-emitting elements constituting the linear light source of attention, and the diffusion plate cross with each other goes beyond a middle point of the linear light source adjacent to the linear light source of attention (Figure 12). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the light emitting element of Johnson et al. with the teachings of West et al. to include an irradiation angle correcting means on the light-emitting portion of the linear light source because "the inventive lens may be advantageously employed to provide side-emitting light-emitting devices that may be used with light guides and reflectors that have very thin profiles and/or large illuminated areas" (West et al.; Column 2, Lines 17-20).

***Allowable Subject Matter***

Claim 6 remains allowed.

The following is an examiner's statement of reasons for allowance: The prior art fails to teach or suggest "the light-emitting element groups are arranged to be deviated every other column or row such that a positional relation among the light-emitting element groups is a delta shape." The most pertinent art teaches light-emitting element groups deviated every other column or row, but is found to be in a rectangular shape. While any three groupings make up a triangular shape, they are not necessarily equilateral triangles, which is equivalent to the claimed delta shape.

The prior art made of record and not relied upon is considered pertinent to claim 6. Chou (US 2005/0169007) teaches a backlight with red, green, and blue LEDs in a triangular pattern.

***Response to Arguments***

Applicant's arguments with respect to claims 1 and 8 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to claims 3-5 and 7, filed 11/20/2006 have been fully considered but they are not persuasive.

In response to applicant's argument that Weber et al. does not teach light sources below the reflection plate, Figure A shows the light source below the reflection plate. In addition, this claim is objected to because it is unclear as to how the light source is below the reflection plate when the Applicant's figures show the light source being above the reflection plate.

In response to applicant's argument that the combination of Johnson et al. and West et al. is nonanalogous art, it has been held that a prior art reference must either be in the field of



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applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, West et al. shows in Figure 12 that the light source is combined with a reflector to emit light in a perpendicular manner to reach the diffuser panel. West et al. also shows a maximum irradiation direction of the light-emitting elements, which is corrected by the light irradiation angle correcting means in the light-emitting portions or on the light-emitting portions of the light-emitting elements constituting the linear light source of attention, and the diffusion plate cross with each other goes beyond a middle point of the linear light source adjacent to the linear light source of attention (Figure 12).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. West et al. (US Patent 6,974,229) teaches a backlight with a reflector covering the non-light-emitting portions of the light emitting diodes.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Makiya whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday-Friday 7:30am - 4:00pm (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong (James) Lee can be reached on (571) 272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJM 01/29/2007

  
JOHN ANTHONY WARD  
PRIMARY EXAMINER